

A study on the genus *Conarete* Pritchard from China (Diptera: Cecidomyiidae)

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Abstract: The present paper reports the genus *Conarete* Pritchard for the first time from China with four species, of which two species are described as new to science: *C. brevipalpa* Li et Bu, sp. nov. and *C. sicyoidea* Li et Bu, sp. nov.; the other two species are *C. indorensis* Grover, 1970 and *C. mihijamensis* Grover, 1963. Key to the known Chinese species of the genus is given. Type specimens are deposited in the Department of Biology, Nankai University, Tianjin, China.

Key words: Diptera; Cecidomyiidae; *Conarete*; new species; China

The genus *Conarete* was erected by Pritchard (1951) for four North American species, *C. crebra* Pritchard, *C. eluta* Pritchard, *C. eschata* Pritchard and *C. texana* (Felt), and two Indian species, *C. indica* (Mani) and *C. calcuttaense* (Nayar). The two Indian species were placed in the genus *Anarete* formerly (Mani, 1934; Nayar 1949). However, *C. indica* (Mani) was brought back to the genus *Anarete* by Grover (1963). Four Indian species were added to the genus *Conarete* from 1956 to 1983 (Grover, 1963, 1970; Rao, 1956), but one of them, *C. orientalis* Rao, was treated as a synonym of *C. calcuttaense* (Nayar) by Grover (1970). Gagné (1995) gave a short review of *Conarete* and the diagnostic characters difference from *Anarete*. Up to now, eight known species have been included in this genus.

In this paper the genus *Conarete* Pritchard is recorded from China for the first time with four species, two of them are described as new to science. All specimens are deposited in the Department of Biology, Nankai University, Tianjin, China.

Conarete Pritchard, 1951

Conarete Pritchard, 1951, *Univ. Calif. Publ. Ent.*, **8** (6): 256.

Type species: *Conarete crebra* Pritchard, 1951.

The genus *Conarete* is closely allied to *Anarete* Haldy. The two genera share several characteristics, including a reduction of the number of antennal flagellomeres, the large tarsal claws with some teeth at least in male, the lack of ocellus in part of their species and the swarming habit. But *Conarete* differs from *Anarete* in having the flagellar segments with distinct necks in male, at least on the distal segments, and each segment with a crenulate whorl of long bristles; the proximolateral roots of the tegmen directed ventrolaterally; the tines of the M fork are more or less parallel and the stem of M slightly sinuous; the presence of a sole of short, dense, erect bristles on the fore tarsi of female.

Key to the Chinese species of *Conarete* (male)

1. Palpus 3-segmented; claw with teeth at apex
..... *C. brevipalpa* Li et Bu, sp. nov.
- Palpus 4-segmented; claw with teeth in the middle 2
2. Aedeagus complex with two constrictions in the middle and a projection at subapex *C. sicyoidea* Li et Bu, sp. nov.
- Aedeagus complex cone-shaped, without constriction in the middle and a projection at subapex 3
3. Fourth palpal segment long, 1.75 times longer than the third; claws with one strong and 1~3 small teeth
..... *C. mihijamensis* Grover
- Fourth palpal segment relatively short, length less than 1.3 times

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of the third; claws with two strong teeth
 *C. indorensis* Grover

***Conarete indorensis* Grover, 1970**

Conarete indorensis Grover, 1970, *Cecid. Ind.*, **5** (2): 141.

This species is recorded for the first time from China.

Specimen examined: 1 ♂, Banfangzi (33.8°N, 108.0°E), Zhouzhi, Shaanxi Province, China, August 7, 1994, BU Wen-Jun leg. at light trap.

Distribution: China (Shaanxi); India (Indore).

***Conarete mihijamensis* Grover, 1963**

Conarete mihijamensis Grover, 1963, *Marcellia*, **31** (2): 114.

This species is recorded for the first time from China.

Specimens examined: 2 ♂♂, Mt. Jianfeng (18.7°N, 108.8°E), Hainan Province, China, May 13, 1988. BU Wen-Jun leg. at light trap.

Distribution: China (Hainan); India (Bihar).

***Conarete brevipalpa* Li et Bu, sp. nov. (Figs. 1~7)**

Male: Wing length 1.64 mm. Ocellus absent. Eye bridge 3~4 facets wide medially. Palpus short, 3-segmented, sparsely setose; first segment subovoid with sensory bristles at inner side, two times as long as wide; second segment subelliptical, slightly shorter than first segment, 2.5 times as long as wide; third segment longest, cylindrical, 6.5 times as long as wide. Antenna long, 0.59 mm in length, 2+9 segments; pedicel much larger than scape; node of each flagellar segment with a crenulate whorl of closely placed, long bristles medially including last one; distal part of nodes with sensory spines, much more at two basal segments; necks short at basal two flagellar segments, distinct from third to eighth segment, neck of sixth flagellar segment 3/4 as long as node, short hairs not only on nodes but also on necks; last segment separated from eighth segment thoroughly or not, with crenulate sensory bristles subapically and several long setae on tip, neck absent. Wing length 2 times its width; vein C extending to 9/10 of wing length, Rs obliterate; r-m very short; tines of M fork parallel. Legs long, sparsely setose; metatarsus equal to rest tarsal segments combined in length, second segment 3/7 as long as

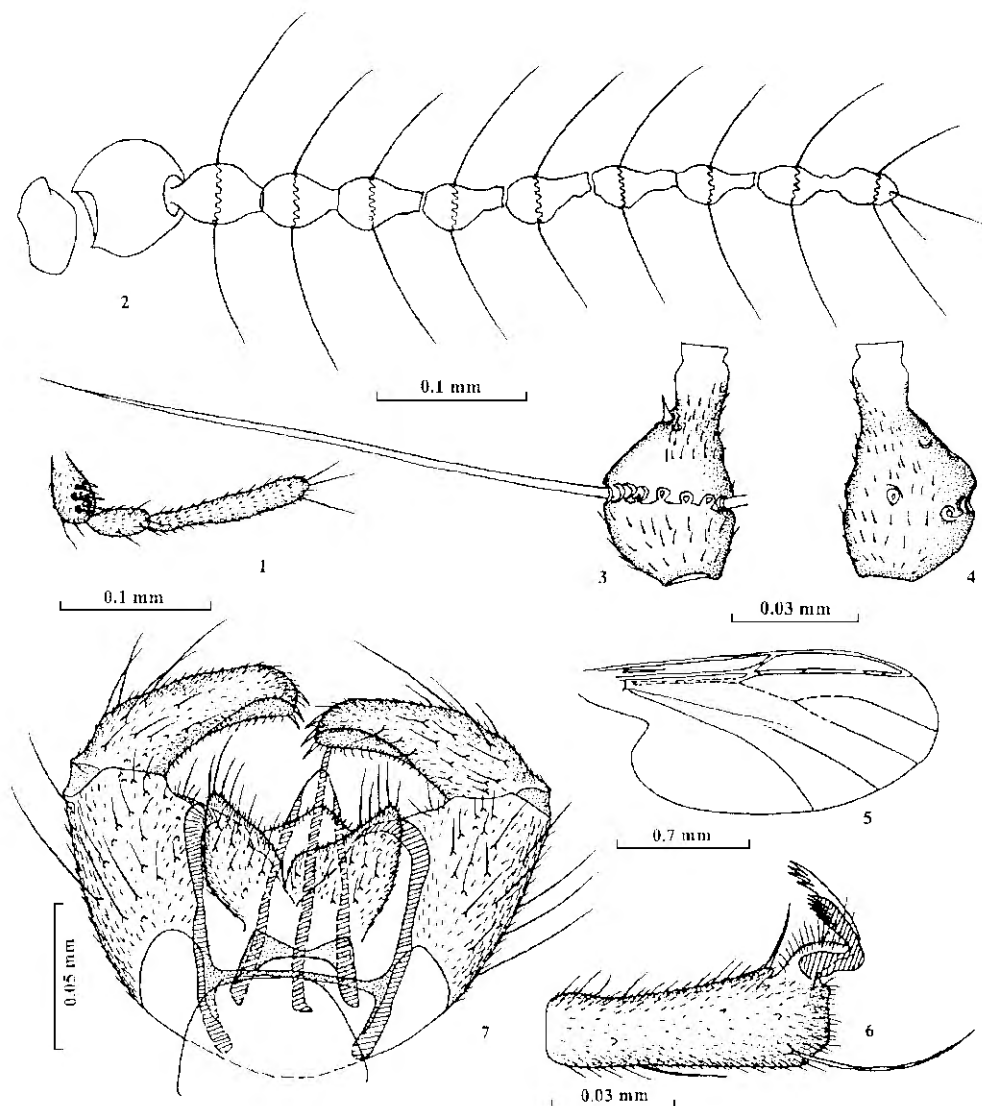
first, third half as long as second, fourth shortest, fifth slightly longer than third. Claw strongly bent at base, with 3~4 teeth at apex; empodium very small. Hypopygium: tergite 9 relatively small, trapezoid; tergite 10 in two lobes, triangular apically, terminal margin with some long setae; sternite 10 bluntly triangular; gonocoxites fused at base and slightly enlarged medially, about 2 times as long as wide; gonostylus 3/5 as long as gonocoxite, about 2.7 times as long as wide, slightly tapered, apices blunt with four short spines and some stout setae; roots of gonocoxite apodemes connected by a thin and indistinct bridge; aedeagus complex cone-shaped; genital rod longer than aedeagus.

Holotype ♂: Mt. Jianfeng (18.7°N, 108.8°E), Hainan Province, China, May 13, 1988, BU Wen-Jun leg. at light trap.

The new species differs from all the other known congeneric species in having palpi 3-segmented (for other species 4-segmented), claw with teeth apically rather than at middle, and empodium very small.

***Conarete sicyoidea* Li et Bu, sp. nov. (Figs. 8~14)**

Male: Wing length 1.23~1.60 mm. Ocellus absent. Eye bridge 2~3 facets wide medially. Palpus long, 4-segmented, sparsely setose; first segment subelliptical, with dense sensory bristles at inner side, 2 times as long as wide; second segment cylindrical, slightly shorter than first, about 2 times as long as wide; third segment subcylindrical, longer than first, 3.6~3.7 times as long as wide; fourth segment longest, cylindrical, 7~8 times as long as wide, 1.7 times longer than third. Antennal length 0.38~0.40 mm, with 2+8 segments; pedicel much larger than scape; node of each segment with one crenulate whorl of long, closely placed bristles medially except last segment; flagellar segments 1~3 without neck, nodes with sensory spines distally; flagellar segments 4~7 each with a distinct neck, neck of sixth flagellar segment 2/5 as long as node; terminal segment consisting of two fused segments, each with a whorl of crenulate bristles, sometimes two segments nearly separated. Wing length 1.9~2.0 times its width; vein C extending to 4/5 wing length; Rs obliterated; r-m very short; tines of M fork parallel. Legs long, sparsely setose, metatarsus equals to rest of tarsal segments com-



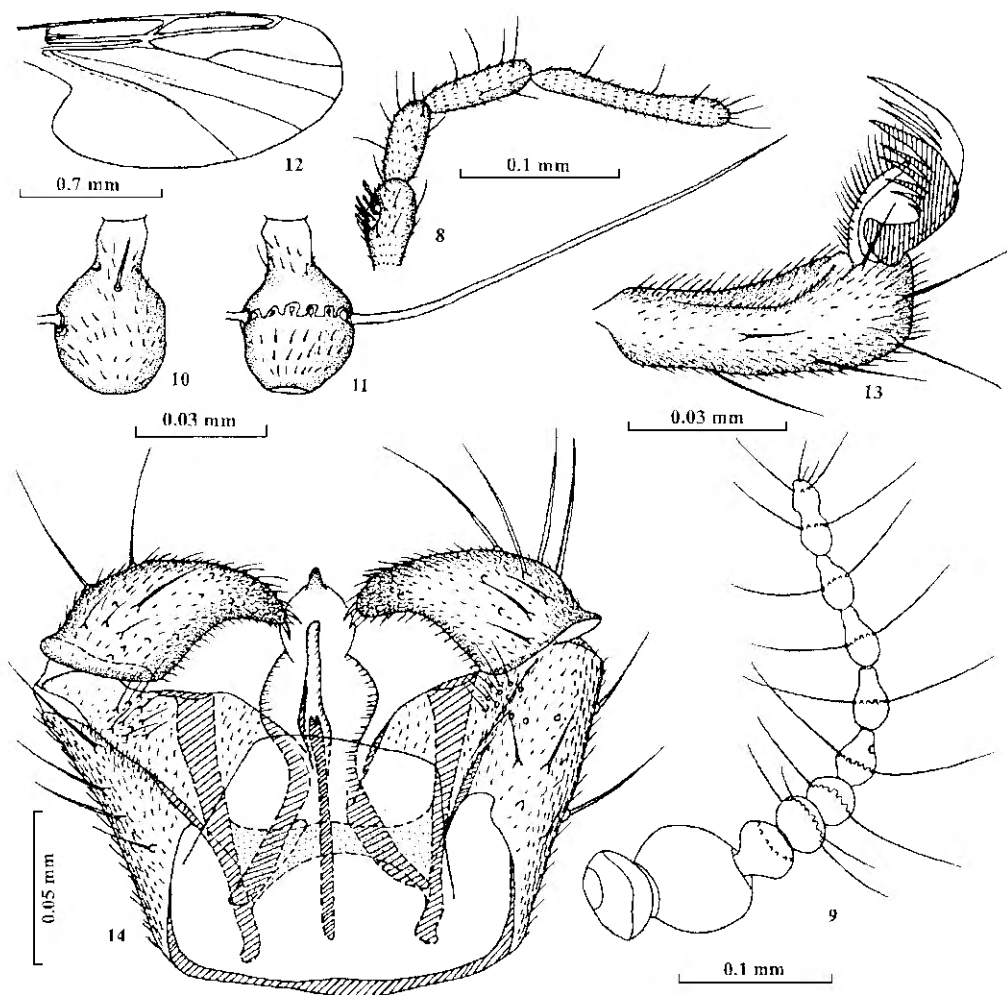
Figs. 1~7 *Conarete brevipalpa* Li *et* Bu, sp. nov. (♂) 短须垫瘿蚊, 新种

1. maxillary palpus 下颚须; 2. antenna 触角; 3. fifth flagellar segment (ventral view) 触角第5鞭节, 腹面观;
4. fifth flagellar segment (dorsal view) 触角第5鞭节, 背面观; 5. wing 翅; 6. fifth tarsomere with claws and empodium (lateral view) 第5跗节, 侧面观, 示爪和爪间突; 7. hypopygium (dorsal view) 雄性外生殖器, 背面观

bined in length; third segment $3/5$ as long as second; fourth segment shortest, $2/3$ as long as third; fifth segment slightly shorter than third. Claws stout, sickle-shaped, pectinate with four large and one small teeth; empodium about half length of claw. Hypopygium: tergite 9 trapezoid; tergite 10 with two lobes, terminal margin with some setae; apical margin of sternite 10 bluntly triangular; gonocoxites fused at base, two times as long as wide, with a group of subapical long setae at inner side; gonostylus short, about $3/5$ as long as gonocoxite, widened at base and abruptly tapered, with several long setae

on basal half, dense short hairs and four large spines on apex; roots of gonocoxite apodemes connected by a bridge; aedeagus complex with two constrictions in middle, and a dorsal directed projection arisen from subapex, genital rod shorter than aedeagus complex.

Holotype ♂: Mt. Jianfeng (18.7°N , 108.8°E), Hainan Province, China, May 13, 1988. BU Wen-Jun leg. at light trap. Paratypes 3 ♂♂: the same data as holotype; 1 ♂, Mt. Diaoluo (18.7°N , 109.8°E), Hainan Province, China, May 19, 1988. BU Wen-Jun leg. at light trap.



Figs. 8~14 *Conarete sicyoidea* Li et Bu, sp. nov. (♂) 葫茎垫癭蚊, 新种

8. maxillary palpus 下颚须; 9. antenna 触角; 10. fifth flagellar segment (dorsal view) 触角第5鞭节, 背面观; 11. fifth flagellar segment (ventral view) 触角第5鞭节, 腹面观; 12. wing 翅; 13. fifth tarsomere with claws and empodium (lateral view) 第5跗节, 侧面观, 示爪和爪间突; 14. hypopygium (dorsal view, not including tergite 10 and sternite 10) 雄性外生殖器, 背面观, 不包括第10背板和第10腹板

This species is similar to *C. mihijamensis* Grover, but can be distinguished from the latter in having aedeagus complex with two constrictions in the middle and a projection at subapex, genital rod shorter than aedeagus complex, gonostylus abruptly tapered from middle, claw with four large and one small teeth.

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References

- Gagné R J. 1995. First record of *Conarete* (Diptera: Cecidomyiidae: Lestremiinae) in the Afrotropical Region, and notes the loss of ocelli in the tribe Lestremiini. *Ann. Nat. Mus.*, 36: 141–145.
- Grover P. 1963. Studies on Indian gall-midges X: five notable genera of sub-family Lestremiinae. *Marcellia*, 31: 108–141.
- Grover P. 1970. Studies on gall-midges of Indian X X X II: on a study of Indian Lestremiinae. *Cecid. Ind.*, 5: 121–180.
- Mani M S. 1934. Studies on Indian Itonididae (Cecidomyiidae: Diptera). *Rec. Ind. Mus.*, 36: 378–451.
- Nayar K K. 1949. New Indian gall midges (Diptera: Cecidomyiidae). *Proc. Roy. Ent. Soc. Lond.* (B), 18: 79–89.
- Pritchard A E. 1951. The North American gall midges of the tribe Lestremiinae, Itonididae (Cecidomyiidae), Diptera. *Univ. Calif. Publ. Ent.*, 8: 239–275.

Rao S N, 1956. New Indian gall midges (Cecidomyiidae (Itonididae):

Diptera). VII. *Ann. Mag. Nat. Hist.*, 9 (12): 65–71.

中国垫瘿蚊属研究

(双翅目：瘿蚊科)

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摘要：记述了双翅目瘿蚊科—中国新记录属垫瘿蚊属 *Conarete* Pritchard 的 4 种，其中包括 2 新种：短须垫瘿蚊 *C. brevipalpa* Li *et* Bu, sp. nov. (模式产地：海南尖峰岭) 和 葫茎垫瘿蚊 *C. sicyoidea* Li *et* Bu, sp. nov. (模式产地：海南尖峰岭)；另外 2 种为在中国首次记录的种：米垫瘿蚊 *C. mihijamensis* Grover (分布：海南尖峰岭) 和 印垫瘿蚊 *C. indorensis* Grover (分布：陕西周至板房子)。文中给出了垫瘿蚊属与近缘的短角瘿蚊属 *Anarete* Haliday 的区别特征和中国种类分种检索表。模式标本均保存于南开大学生物学系昆虫标本室。

关键词：双翅目；瘿蚊科；垫瘿蚊属；新种；中国

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